

Strategic R&D Partnership for Sustainable Vehicle Recycling

Fifteen million cars and trucks reach the end of their useful life in the United States each year. More than 75% of the materials from end-of-life vehicles (ELV) are profitably recovered and recycled by the private sector. Everyone shares in the broad economic and environmental benefits of these *market-driven* recycling enterprises.



Mechanical recycling—recovery of materials for re-use in automotive and other applications—is just one technical approach that the US ELV CRADA Team is demonstrating. Other technologies under study include energy recovery and the conversion of shredder residues to chemicals and fuels.

Automotive materials recycling is a success story. Yet, up to 25% of the materials are not presently recycled. These unrecycled materials are commonly referred to as “shredder residues” and are generally landfilled.

Automakers promote economic and environmental sustainability by routinely examining the life-cycle impacts of all vehicle materials. To achieve greater fuel-efficiency, today's cars incorporate an increased share of innovative, lightweight materials. While these materials greatly enhance efficiency during vehicle use, they can present special challenges for recycling. Continued improvements in fuel economy will require novel automotive designs and increased use of advanced materials—which will continue to present recycling challenges.

Long-Term Partnership Goals

- › Enable optimum recycling of all automotive materials
- › Remove recycling barriers to use of advanced, lightweight materials
- › Obviate regulatory recycle mandates

A Government/Industry Collaboration

Industry and government have come together to address challenges to the sustainable recycling of current and future automotive materials. The U.S. Department of Energy has structured a five-year, multi-million dollar, cost-shared Cooperative Research and Development Agreement (CRADA) among three leaders in science and technology:

- › **Argonne National Laboratory**, operated by The University of Chicago, is one of DOE's largest research centers; it boasts 1,400 scientists and engineers, over 200 areas of research, and an operating budget of more than \$475 million,
- › **The Vehicle Recycling Partnership** is part of the United States Council for Automotive Research (USCAR), under which DaimlerChrysler Corporation, Ford, and General Motors cooperatively address shared technological and environmental concerns.
- › **The American Plastics Council (APC)** advocates unlimited opportunities for plastics and promotes their economic, environmental, and societal benefits.

This collaboration creates a core of expertise and resources to significantly expand and enhance the sustainable recycling of automotive materials.

US ELV CRADA Team Objectives

The US ELV CRADA Team is actively engaged in a broad range of R&D activities to advance technology for the sustainable recycling of all materials used in automotive vehicles today and in the future,

The Team's R&D agenda focuses on the following key objectives:

- › Develop and demonstrate sustainable technologies and processes for ELV recycling
- › Demonstrate feasibility of resource recovery from shredder residues including materials recovery for re-use in automotive and other applications, chemical conversion of residues to fuels and chemicals, and energy recovery
- › Develop viable strategies for the control and minimization, or elimination, of substances of concern
- › Benchmark recycle technology and provide data to stakeholders
- › Stimulate markets for reprocessed materials to support economic collection, processing, and transportation
- › Transfer technology to commercial practice

Outreach

The CRADA TEAM actively seeks opportunities to work in cooperation with other major stakeholders in the United States, Europe, and Asia. Sustainable ELV recycling is a global issue. Cooperative efforts will further leverage available funds, knowledge, and other resources to accelerate technology solutions.

**Promoting
socially responsible
and economically
achievable solutions
for end-of-life
vehicles**

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And read our roadmap:

*A Roadmap for Recycling End-of-Life
Vehicles of the Future*

(Visit <http://pe.es.anl.gov> and follow
the Documentation link)

